REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1 and 3-17 remain in the application. Claims 1 and 12 have been amended. Claim 2 has been previously cancelled.

In item 4 on pages 2-3 of the above-mentioned Office action, claims 1 and 3-11 have been rejected as being unpatentable over Terry (US 6,061,356) in view of Zhang et al. (US 6,396,833 B1) under 35 U.S.C. § 103(a).

In item 5 on pages 4-5 of the above-mentioned Office action, claims 12-17 have been rejected as being unpatentable over Zhang et al. in view of Mendelson et al. (US 6,343,083) under 35 U.S.C. § 103(a).

As will be explained below, it is believed that the claims were patentable over the cited art in their original form and the claims have, therefore, not been amended to overcome the references. However, the language of claims 1 and 12 has been modified in an effort to even more clearly define the invention of the instant application.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 calls for, inter alia:

> connecting the first router device to a communications network through a network gateway unit;
>
> providing a hardware address according to a routing protocol, the hardware address being used to identify the second router device located downstream with respect to a data path leading to a transmission destination of the data;
>
> allocating the hardware address to the data to be transmitted with the first router device dependent upon the transmission destination of the data;
>
> transmitting the hardware address and the data from the first router device to the network gateway unit;
>
> checking, with the network gateway unit, whether or not the transmitted hardware address matches a hardware address persistently or by configuration stored in a memory of the network gateway unit and, in the event of a positive check result:
>
> > allocating a network address to the data with the network gateway unit, the network address being allocated to the transmitted hardware address in the network gateway unit and identifying an exit point of the communications network, the allocated network address being stored persistently or by configuration within the network gateway unit;
> >
> > forwarding the network address and the data from the network gateway unit into the communications network after conversion according to a transmission protocol used in the communications network; and
> >
> > transmitting the data by the communications network to the exit point by the network address, the exit point being where the data is fed to the second router device.

Claim 12 calls for, inter alia:

> an allocation table for storing hardware addresses, being link layer or MAC addresses, each respectively allocated to a network address identifying an exit point of the communications network to a relevant one of the router devices, the first router device using the hardware addresses to identify another one of the router devices;
>
> an address-checking device determining if a hardware address arriving from the first router device matches one of the hardware addresses in said allocation table, said address-checking device connected to said allocation table;
>
> an address allocation device allocating data arriving from the first router device, the data being allocated to a respective one of the hardware addresses, to a network address allocated to the respective one of the hardware addresses in said allocation table, said address allocation device connected to said allocation table; and
>
> a protocol conversion device converting and transmitting the data arriving from the first router device according to the transmission protocol, the network address allocated to the data being used as address information, said protocol conversion device connected to said address-checking device and to said address allocation device.

Terry concerns the adaptation of network layer IPX addresses when switching data frames between networks with different link layer protocols. IPX addresses are network layer addresses, which are used to transport data generally across several networks to a destination identified by the respective network address. In contrast, the link layer protocol uses so called MAC addresses to transmit data within one respective network between network devices (e.g. routers) located on the path leading to the destination. This particularly implies that each intermediate network device located on that path has

to replace the link layer MAC address (identifying this intermediate network device) of a received data packet with a MAC address identifying the next network device on the path.

According to the IPX protocol parts of the (network layer) IPX addresses are defined to contain MAC addresses (see e.g. Terry, column 4, lines 45-53). However, a MAC address contained in an IPX address does generally not address the next directly connected intermediate network device but rather the final destination.

Now, as the bit order of MAC addresses may differ in networks with different link layer protocols, the MAC addresses in the link layer have to be adapted when switching data frames between such different networks. However, in order to maintain consistency a respective MAC address contained in an IPX address should be adapted too, but only if that MAC address (of the final destination) refers to the different network just entered. If the entered network is not the network of the final destination, then the MAC address contained in the IPX address should not be adapted. To achieve this Terry compares the link layer MAC address with the MAC address contained in the IPX address in order to determine whether the entered network is the destination network. If both MAC addresses match, the entered network is

assumed to be the destination network and the MAC address within the IPX address is adapted.

The Examiner has identified the first router device and the second router device of claim 1 of the instant application with the router1 804 and the router2 810 of Terry (see e.g. Fig. 8). Furthermore, the Examiner has related the method steps regarding and performed by the network gateway unit of claim 1 of the instant application to the switch 808 within the network 806 of Terry (see Fig. 8). However, even assuming this identification is correct, independent claim 1 of the instant application recites at least the following limitations not disclosed or suggested by Terry:

- Terry does not disclose a network gateway unit, i.e. switch 808 being located between a first router device, i.e. router1 804 and the network as claim 1 of the instant application specifies.

  There is neither a physical implementation nor any other implementation of a network gateway unit disclosed by Terry. Moreover, it is clearly not well known in the art that a network gateway device acts according to claim 1 of the instant application. This is even supported by

Zhang et al. since the gateway disclosed therein does not act according to claim 1 of the instant application.

Actually, the network 806 of Terry acts as one transparent network, which allows the routers 804 and 810 to address each other by their link layer MAC addresses R1 and R2 (see Terry, column 13, lines 32-39 and Fig. 9B). However, this implies that the routers are adjacent routers, which are directly connected to a shared single network (see Terry, column 5, lines 53-57, column 2, lines 4-6 and column 13, lines 35-39). If there were an additional gateway between the router 804 and the network 806, the hardware address of this gateway had to be used as link layer MAC address by the router 804 (and not the hardware address R2 of the router 810). As the routers 804 and 810 require being adjacent with respect to the single intermediate network (and perform the necessary address translations by themselves), Terry clearly teaches away from inserting an additional gateway between the router 804 and the network 808.

- Terry does not disclose that the network gateway unit, i.e. switch 808 checks whether or not the transmitted hardware address matches a hardware address stored in a memory of the network gateway unit.

Terry only discloses e.g. in column 13, lines 39-48 that the switch 808 performs a comparison between link layer MAC addresses (referring to source and destination, respectively) of a received frame and (source and destination) node addresses of a IPX header contained in the same frame. All compared addresses are contained within the frame just received. There is no hint in Terry that one of that addresses to be compared is already stored in the switch 808.

Claim 1 has been modified in order to make it clear that the stored hardware address is stored persistently or by configuration within the network gateway unit. Support may be found on page 10, line 19 to page 17, line 11 and page 18, line 9 onward of the specification.

- Terry does not disclose that the network gateway unit i.e. switch 808 allocates a network address to the above hardware address in the switch to the data in case of a positive check result. Actually, Terry gives no indication of an allocation of a network address, the allocation being determined by an address of a different and particularly lower address layer.

The switch 808 of Terry neither allocates a network address (i.e. IPX address) to data, nor contains a network address allocated to a hardware address, nor performs any modifications to a network address (see column 13, lines 35-48).

Moreover, it is not disclosed at all what the switch 808 would do in case of a match (positive check result). Since the switch's network 806 is neither identical to the network 802 of the client (data source) nor to the network 812 of the server (data destination), the switch 808 would never encounter a match in this configuration. A match could only happen if either the data source or the data destination (or both) would be located within the network of the switch (see, for example, column 13, lines 63-66).

Claim 1 has been modified in order to make it clear that the allocated network address is stored persistently or by configuration within the network gateway unit. Support may be found on page 16, line 19 to page 17, line 11, and page 18, line 9 onward of the specification.

- Terry does not disclose that the exit point of the network is identified by a network address and in particular by the above network address allocated to the hardware address in the switch.

  The data frames of Terry leave the network 806 at the router2 810. However, the router2 810 is identified by the MAC address R2 (see column 13, lines 36-43), which is not a network address but rather a link layer address. The only network (IPX) addresses available in the switch of Terry are the destination address S and the source address C (see Figs. 9A-9C and column 13, lines 15-17). However, these addresses do not identify the router2 810 or any other exit point of the network 806 but rather the server 814 as data destination and the client 800 as data source, respectively.

Moreover, neither Terry nor Zhang et al. disclose any other entity which acts like the network gateway unit of claim 1 of the instant application.

There is also no motivation to insert the gateway of Zhang et al. between the router1 804 and the network 806 of Terry. As already discussed above, Terry clearly teaches away from inserting an additional gateway between the router1 804 and

the network 808. In Terry there is also no need and, therefore, no motivation to "provide physical implementation of protocol conver3ion to meet the system specification and requirement" as asserted by the Examiner. Actually, all protocol conversion requirements are already fulfilled by the embodiments of Terry.

If the Examiner still insists on his argumentation, Applicants would kindly ask for clarifying which entities in Terry or Zhang et al. the Examiner identifies as the transmitted hardware address, the network address, the stored hardware address, the exit point, and the transmission destination of the data.

The network gateway unit of claim 12 of the instant application has at least the following features not disclosed or suggested by Zhang et al.:

- Zhang et al. do not disclose an allocation table for storing hardware addresses each respectively allocated to a network address identifying an exit point of the communications network.

  The Examiner has identified the routing table 304 of Zhang et al. as the allocation table of claim 12 of the

instant application. However, Zhang et al. do not disclose that the routing table 304 stores any hardware addresses, i.e. link layer addresses. Rather, Zhang et al.'s routing tables store (like conventional routing tables) IP addresses, which are network layer addresses and cannot be regarded as link layer addresses (see e.g. Zhang et al. column 1, lines 8-11; column 2, lines 52-62 "network addresses"; column 4, lines 12-17, 50-58; column 6, lines 45-50). However, the use of hardware addresses is a crucial feature of the invention of the instant application, as already discussed in the response to the previous office action.

Claim 12 has been modified to clarify that the hardware addresses are link layer or MAC addresses (see e.g. page 2, line 24 onward in the specification)

In column 6, lines 7-60 of Zhang et al. a Layer Two Tunneling Protocol is mentioned. This protocol is used by the gateway in a transparent manner to establish a tunnel to a router network address (see column 6, lines 7-10). However, the routing tables of Zhang et al.'s gateway do not contain any link layer addresses of that Layer Two Tunneling Protocol.

- Zhang et al. do not disclose that a hardware address stored in the allocation table i.e. routing table is used by the first router to identify another router connected to the network.

  Rather the routers of Zhang et al. identify each other by network addresses.

- Zhang et al. do not disclose an address checking device determining whether a hardware address arriving from the first router device matches one of the hardware addresses in the allocation or routing table.

- Zhang et al. do not disclose an address allocation device allocating data arriving from the first router device, the data being allocated to a hardware address, to that network address which is allocated to that hardware address in the allocation or router table. Actually, Zhang et al. give no indication of an allocation of network addresses, the allocation being determined by addresses of a different and particularly lower address layer.

> The routing table searcher 302 and 308 of Zhang et al. only search network layer addressee. Hence, they act on addresses of the same address layer.

Other prior art references do not make up for the deficiencies of Terry and Zhang et al.

With regard to dependent claims, the arguments in the response to the previous Office action are still applicable because the Examiner did not present any new arguments regarding the dependent claims in the light of the newly cited references Terry and Zhang et al.

Moreover, the features of claims 8 and 14, namely that the network gateway unit answers an inquiry relating to a hardware address of another device - a router device - could not be found in any of the cited prior art documents. Normally, any network device answers only hardware address inquires relating to its own hardware address. If the Examiner maintains his rejection, Applicants would kindly ask for an indication where such a feature could be found in the cited prior art documents.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either

show or suggest the features of claims 1 and 12. Claims 1 and 12 are, therefore, believed to be patentable over the art and since all of the dependent claims are ultimately dependent on claims 1 or 12, they are believed to be patentable as well.

In view of the foregoing, reconsideration and allowance of claims 1 and 3-17 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate a telephone call so that, if possible, patentable language can be worked out.

Petition for extension is herewith made. The extension fee for response within a period of one month pursuant to Section 1.136(a) in the amount of $120.00 in accordance with Section 1.17 is enclosed herewith.

Please charge any fees which might be due with respect to 37

CFR Sections 1.16 and 1.17 to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,

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For Applicants

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